(12) DM + 57°·2487. R.A. $22^h\ 10^m{\cdot}5$. Decl. + 57° 31′ (1900). Mag. 9·1. October 6, mag. 9·0; very red; the bands are very large, and at first it was thought to be IV., but afterwards I was convinced that it was III. ! ! ! The spectrum is quite discontinuous, and some of the bands are of unusual size.

Some Nebulous Objects not in the New General Catalogue of Nebulæ. By the Rev. T. E. Espin, M.A.

While sweeping for red stars I have encountered various nebulous objects. These have been carefully marked on the chart of Argelander of that region, estimating their position from the neighbouring stars. Most of these were subsequently found in the New G.C. of Nebulæ. The following are, however, new. In several cases they are partially resolved, and may really be gatherings of very faint stars. The places which are approximate only, but which are probably correct to within 10^s of R.A. and 3′ of Decl., have been brought up to 1860.

(1) R.A. $19^h\ 16^m\ 33^s$ Decl. + 20° 29′. Probably a cluster of very faint stars. October 8.
(2) R.A. $19^h\ 30^m\ 46^s$ Decl. + 40° 44′. Faint nebulosity. October 6.
(3) R.A. $19^h\ 33^m\ 8^s$ Decl. + 19° 54′. Very faint, extending N.P. from a 9·5 mag. star. October 8.
(4) R.A. $19^h\ 36^m\ 43^s$ Decl. + 37° 19′. Nebula round a group of faint stars. September 16.
(5) R.A. $19^h\ 37^m\ 5^s$ Decl. + 27° 10′. While sweeping on September 14 I suddenly came upon a dark space. On carefully examining the field there is evidently a large faint nebulosity, mixed up with stars, sharply defined on *f* side, stretching N. and S. Max Wolf's photograph shows this nebulosity.
(6) R.A. $20^h\ 4^m\ 43^s$ Decl. + 34° 33′. Faint nebulosity. September 19.
(7) R.A. $20^h\ 6^m\ 0^s$ Decl. + 40° 46′. Extremely faint nebula within a circle of bright stars. October 6.
(8) R.A. $20^h\ 11^m\ 42^s$ Decl. + 24° 45′. Large, misty patch, partly resolved. October 8.
(9) R.A. $21^h\ 5^m\ 39^s$ Decl. + 46° 17′. Faint, extending N. from DM + 46°·3214, 9·4 mag. September 9.
(10) R.A. $21^h\ 7^m\ 12^s$ Decl. + 47° 11′. Faint, large, many small stars. September 9.
(11) R.A. $21^h\ 18^m\ 44^s$ Decl. + 54° 51′. Faint, diffused, some faint stars. September 16.
(12) R.A. $21^h\ 39^m\ 19^s$ Decl. + 52° 18′. Misty patch, partly resolved. September 16.

(13) R.A. $21^h\ 39^m\ 59^s$ Decl. + 52° 37′. Faint, partly resolved; stars 14 mag. September 16.

(14) R.A. $22^h\ 5^m\ 21^s$ Decl. + 52° 8′. A remarkable cluster with six distinct radiating branches. Stars from 12 to 15. Very beautiful. September 19.

(15) R.A. $22^h\ 11^m\ 11^s$ Decl. + 53° 21′. Haze round some dozen faint stars.

Description of a Perfectly Achromatic Refractor.

By H. Dennis Taylor.

Now that photography is becoming such an indispensable supplement to eye observation in astronomical work, the need for a form of refracting telescope which is perfectly corrected for photographic as well as for visual purposes becomes more and more apparent. And if, simultaneously with that condition, a great improvement in the character of the visual image can also be obtained, then we have the elements of a very substantial improvement in the refractor. In a paper which I had the honour of reading to this Society in November last I pointed out the considerable loss of light for defining purposes which must take place, owing to the usual colour aberrations ever present in the case of double object glasses made of ordinary crown and flint glasses. I there gave the losses of light, as determined by a theoretical method, for certain objectives of various sizes. Since then I have been able to carry out a delicate experiment with a $12\frac{1}{2}$-inch object glass, whereby the amount of light lost owing to the colour aberrations was separated from the real image, and rendered approximately measurable. The result certainly confirmed the figures giving percentage of light lost, which I had previously arrived at by an *à priori* line of reasoning. I hope to have the pleasure of describing this experiment in a future paper. Thus I feel justified in saying that the principal improvement in the visual image to be expected from the almost perfect achromatism attained in this new objective is a more brilliantly defined image, the fine details being rendered in more black and white contrast than we have been accustomed to see, thus standing out, in an artistic sense, with greater sharpness. For this new objective is to all intents and purposes as achromatic as a reflecting telescope. My justification for this statement is as follows:—

It must be remembered that in practice the reflecting *telescope*, mirror and Huyghenian eye-piece combined, is not absolutely achromatic. However absolute may be the achromatism of the primary image, yet the eye-piece, if of the Huyghenian or Ramsden type, always introduces its own colour aberrations. Taking the case of a Huyghenian eye-piece of 1 inch equivalent